A

BRIEF DESCRIPTION

OF

The Plague.

WITH

OBSERVATIONS

ON ITS

PREVENTION AND CURE.

BY

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PREFACE.

By a strict enforcement of *quarantine*, this country has hitherto been preserved from the dreadful calamity of that pestilence, with which the southern parts of Europe are at this time afflicted; and by an unremitting perseverance in the same precautionary plan, we may still hope to avert the impending evil. Yet while there is the smallest possibility of the *quarantine* being evaded (particularly in the instance of clothes or merchandise) *in a single instance* (which single instance would be adequate to the production of the most extensive misery) *it behoves us to be fully prepared against the introduction of the epidemic.* Hence the author conceives it to be the bounden duty of medical practitioners, in every part of the United

Kingdom, but more especially of those who reside in the sea-port towns, to make themselves acquainted with the symptoms of the plague, with the nature of its contagion, the manner in which it is propagated, and the most effectual means of prevention.

With this intention the present small treatise has been published, which the author would not have ventured upon, had this been the first time of giving his attention to this important subject. But as far back as the year 1788, when he was attending the hospitals at Vienna, his attention was directed to this inquiry, by the conversation among medical men of that capital, on the plague, in consequence of the then rupture between Austria and the Porte. He then consulted the best writers on the subject; and some years after (viz. in 1799) he was induced to translate *De Mertens'* Account of the Plague which raged at Moscow in 1771.

On the present occasion he has derived great assistance from *Dr. Russell's* book; a work which contains a vast stock of valuable information on the subject, but which is by far too

bulky and diffuse to answer the purposes intended by the present publication. He has also been much indebted to a smaller work published by *Dr. Lange*, under the title of Rudimenta Doctrinæ de Peste*.

To the information derived from these and other sources, he has added the more recent observations made by the French and British medical practitioners, who accompanied the military expeditions, from their respective countries, to Egypt; the former in 1798, the latter in 1801.

Thus he has endeavoured to give a summary statement of whatever is most interesting in regard to the history, propagation, prevention, and cure of the plague; a statement which, he hopes, will not be unacceptable to the medical profession, in the present circumstances of the country.

In particular, he flatters himself that, under

* Martini Lange, M. D. &c. Rudimenta Doctrinæ de Peste, quibus additæ sunt Observationes Pestis Transylvanicæ Anni 1786. Editio altera. Offenbach, 1791.

the sections which relate to the PREVENTION and CURE, he has introduced *some new suggestions*, which may not be deemed unworthy of notice.

London, Oct. 12th, 1813.

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A

BRIEF DESCRIPTION

OF

The Plague.

SECTION I.

THE Plague is a contagious febrile disease, accompanied by symptoms of debility, with affection of the nerves and brain, and an eruption of petechiæ, buboes, and carbuncles.

The buboes and carbuncles, joined to its contagious nature, constitute its essential character, and render it as much a *sui generis* disease as the small-pox itself; but, as sometimes happens in the confluent form of the last-mentioned exanthematous fever, death takes place in the most malignant attacks of the plague,

before the eruptions have time to come out*.

The contagion of typhus, and some other contagions, induce a remarkable prostration of strength; but rarely within the same space of time, in a degree equal to that of the plague, which, when it becomes epidemic, is more rapidly destructive of life than any other febrile contagion. In the majority of fatal cases, death takes place on the third or fourth day; frequently on the second day; and sometimes within a few hours † from the first attack. It should further be remarked, that at the begin-

* Yet in such cases, on inspecting the bodies after death, there will generally be found the beginnings of buboes (*rudimenta bubonum*), or a livid appearance in those places where nature had endeavoured to throw out buboes, or dark-coloured maculæ and vibices, on the breast, back, or abdomen. In all cases of sudden death from an unknown cause, these circumstances should be particularly attended to by medical practitioners, in times when the country is exposed to the risk of importing the plague contagion.

† Instances of persons dying within a few hours after being seized with the plague, are recorded by *Chenot*, *Lange*, &c. See also *M'Gregor's* Medical Sketches, p. 131.

ning, and during the height of a pestilential epidemy, many more die than recover*; but the contrary is the case, when the disorder is on the decline.

The general disturbance of the system which ushers in an attack of the plague, is similar to that which is observed in a common fever; namely, rigors succeeded by heat, headach, drowsiness, prostration of strength, and depression of spirits, white and foul tongue, bitter taste in the mouth, viscosity of the saliva, nausea, vomiting, oppression about the præcordia, &c. But as symptoms not common to other fevers, and peculiar to the plague, must be mentioned, *ardor urinæ*,

* During the height of the plague at Moscow in 1771, not more than four in one hundred, *i. e.* one in twenty-five, recovered. In the Vienna plague of 1713, when at its height, not more than one in thirty recovered; but these are to be considered as instances of the greatest degree of mortality produced by the pestilential contagion. On an average, its mortality may be estimated at about two thirds of those who are subjected to its influence: and this, according to *Mons. Desgenettes*, was the proportion of deaths among those who caught the plague in the French army which invaded Egypt.

*and an increased secretion of the sebaceous humour, so that the skin, especially of the hands and face, is more unctuous and glossy than usual**. Also, *an itching sensation, or pain in the glandular and other parts, where buboes or carbuncles afterwards make their appearance. The affection of the brain (whether it be stupor or delirium) comes on earlier than is usual in other febrile diseases; and tremours, with palpitation of the heart, and other nervous symptoms, are more frequent.* The fever is generally of the continued type, but it is sometimes remittent, and sometimes intermittent†. It abates, in favourable cases, on the eruption of the buboes‡.

The symptoms above enumerated occur in a greater or less degree according to

* *Orræus* particularly mentions the circumstance of the sebaceous humour being increased to a remarkable degree.

† See *M'Gregor's* Medical Sketches of the Expedition to Egypt, pp. 111, 112.

‡ The febrile affection is sometimes so slight as scarcely to be observable. Hence some have refused, in opposition to the general character of the plague, to place it in the class of pyrexiæ.

the various modifications which the disorder undergoes from climate, constitution, and season of the year. These modifications are so numerous, that they occasion no small difficulty in every attempt to reduce them under proper heads. We shall follow some of the latest and best writers on this subject, in establishing three principal forms or types of the plague; namely,

I. PESTIS *mitior*.—II. PESTIS *gravior*.—III. PESTIS *gravissima**.

I. PESTIS *mitior*. In this form of the plague the following symptoms are observed:

* *Chenot* makes seven types of the plague; the Marseilles physicians five; *Dr. Russel* six; and *Chicoyneau* only two, namely, pestis mitis and pestis atrox. The three types above stated are chiefly taken from *Lange*, who, however, makes many subdivisions, according to the degree of arterial action, or of nervous, bilious, or malignant character of the disorder. These types correspond to the *slow type*, the *acute type*, and the *most acute type* of the plague, as described by *Orræus*. Perhaps, however, the best division, in relation to the curative treatment, would be into *Pestis subfebrilis*, *Pestis comatosa*, and *Pestis ferox*.

Slight and transitory chilliness, succeeded by a heat scarcely, if at all, exceeding the natural degree of bodily warmth, flying pains, lassitude and loathing of food, heaviness or pain of the head, seldom any confusion of intellect, scarce any thirst, and the pulse nearly the same as that of a person in health. On the second or third day a bubo appears, or a critical sweat comes on, and the disorder terminates favourably on the fourth or seventh day. In this mild form of the plague, the general indisposition is hardly beyond that of a common cold, and the patients are often capable of going about as usual.—In the

II. Pestis *gravior*, there are irregular shiverings, followed by increased heat, pain about the upper orifice of the stomach*, great oppression about the præcordia†, nausea, bilious vomitings, dry

* This symptom is particularly noticed by *Mackenzie*, in his description of the plague as it occurred at Constantinople. *Hodges* conjectures that it sometimes depends on the formation of a carbuncle in that part.

† *Orræus* describes the anxietas præcordiorum as a

cough, pain in the head, neck, back, loins, and limbs, vertigo, heaviness, drowsiness, and stupefaction*; the body sometimes bound, sometimes loose; extreme depression of spirits, and terror without an apparent cause; palpitations of the heart; sudden prostration of strength; delirium (even at the beginning of the attack), generally low†, seldom furious; faintings; a burning and dry skin; the countenance, in some, melancholy, and bedewed with tears, in others wild and distracted‡; the eyes red (from turgidity of the vessels of the tunica conjunctiva), rolling, and

leading symptom in the plague. It consists (he says) in a certain oppressive, suffocating, and altogether intolerable sensation at the pit of the stomach.

* *Hodges* relates, that in the London plague of 1665, from the beginning of the attack, many were seized with a coma, and slept as if they had taken an opiate.

† In this low delirium, *which resembles intoxication*, the patients (as *Orræus* observes) talk incessantly; but their speech is so broken and stuttering as to be quite unintelligible.

‡ *Mackenzie* describes the countenance in some "as wild and staring; in others, frighted, sad, and pale."

fiery*. The speech is hurried and broken. The pulse remarkably variable; sometimes full and hard, sometimes small and soft, and scarcely perceptible; in many instances intermitting, but generally quick and weak. The tongue sometimes white, sometimes yellowish-white, sometimes moist, sometimes dry†. The respiration for the most part natural. The

* The appearance of the eyes and countenance in the plague is such (says *Orræus*), as when once seen, will ever afterwards enable even the most superficial observers to recognise the disease. The eyes are unusually prominent, and the vessels of the tunica albuginea are turgid with blood, so as to produce a præternatural redness. They are moreover watery, sometimes streaming with tears, and have a sparkling fierceness. But in the advanced stage of the disorder, when the powers of life become exhausted, the eyes sink in, the redness gradually goes off, and a little while before death they become dull, and appear as if they had a film over them.—See also *Russell*, pp. 83, 84, who terms it the "*muddy dull eye*, mixed with something of lustre;" a seeming contradiction in language, but expressive of the singular appearance.

† *Dr. Price*, physician to the British forces in Egypt, describes a peculiar appearance of the tongue, called the *streaked* or *fiery* tongue, produced by alternate streaks or patches of white and red.—*Bancroft* on Febrile Contagion.

urine sometimes not altered, at other times turbid, oily *(pinguis)*, loaded with white mucus*, sometimes high-coloured, black, bloody. On the second, third, or fourth day, the patients complain of pains in the groins, armpits, or neck, succeeded by buboes alone, or by buboes and carbuncles. The eruption of buboes is followed by a remission of the febrile symptoms, except in the worst cases; but a remission is seldom observed when carbuncles come out, and never when petechiæ or vibices make their appearance. Although many die of the disorder under this form, yet is the fatality much greater in the following:

III. Pestis *gravissima.* In this form of the plague the infected are suddenly attacked with a violent shivering, which lasts a long time, and is not followed by much heat or thirst. The pulse is irre-

* *Orræus* remarks, that there is often a discharge from the urethra of a white, viscid fluid, resembling pus, similar to what happens in a gleet. This running is not accompanied with pain, and ceases spontaneously in a few days.

gular, quick, weak, and scarcely perceptible. In some there is tinnitus aurium and deafness; with vertigo, confusion of the head resembling intoxication, and vomiting of green, black, blood-like matter *(saburra)*; hoarseness*, sneezing, pain of the heart and chest, tremours†, stammering, drowsiness, and stupefaction; partial sweats about the head and breast, the extremities being at the same time cold; hiccup; cough, with laborious respiration, sometimes quick and short, at other times slow and deep, accompanied with sighs; the tongue often dry, black, and furred; bloody stools; petechiæ, hæmorrhages, vibices, small yellow or livid pustules *(pustulæ)*‡; fœtid breath and perspiration, the last often extremely profuse; unquenchable thirst; violent inward heat (as stated by

* A swelling in the throat is mentioned by *Mackenzie* as a common symptom in the plague at Constantinople.

† *Dr. Price* lays great stress on tremour of the upper extremities, as a leading symptom in an attack of the plague.—See *M'Gregor's* Medical Sketches, p. 125.

‡ A smaller variety of carbuncle.

the patients), without a corresponding heat of the skin*. Of the patients thus affected, some die in a state of phrensy†, but more in a comatose state; others are destroyed by pneumonic affection, or some other internal inflammation‡; others sink under vertigo, syncope, headach, and debility, without any confusion of the mind; while in others the fatal termination is preceded by convulsions.

The greater part of those who are seized with this form of the plague, die between the first and fourth day‖; some on the fifth and sixth day. It is very

* The internal parts all on fire (to use the expression of some writers), while the temperature of the skin is moderate. In these cases, there are probably carbuncles in the lungs, stomach, or other viscera.—See, further on, an account of the appearances on dissection.

† The sick, quickly after seizure, grew delirious, running wildly about the streets, if they were not confined by force. *Hodges*, p. 95.——The same circumstance is recorded in the History of the Plague at Marseilles.

‡ See, under the account of the appearances on dissection, an observation on the difference between *simple* and *pestilential* inflammation.

‖ Often in less than twenty-four hours.

rarely that the disorder is protracted beyond the seventh and eleventh day.

In this form of the plague, death often takes place before the eruptions have time to show themselves; but on inspection of the bodies after death, the beginnings of buboes *(rudimenta bubonum)* are seen, or a livid colour in those parts where such eruptions should have appeared.

Whenever the plague rages epidemically, it is divisible into three periods, its *beginning*, its *height*, and its *decline*. In the first of these periods, petechiæ* are very common, sometimes with, and sometimes without buboes; in the second, buboes, carbuncles, petechiæ, large maculæ, and vibices; and in the last, buboes alone.

When the plague breaks out in any

* The first cases of the plague at Moscow in 1771, exhibited no other eruptions besides petechiæ, as related by *De Mertens*. Perhaps, however, if the bodies had been diligently inspected after death, the rudiments of buboes, or a livid appearance in the groins or armpits, would have been discovered.

part of Europe, it rages with the greatest fury during the months of August and September, when the atmospheric heat is the greatest. On the contrary, it is said to abate during the hottest season in Egypt* and the Levant. In European countries it is generally† suppressed by the winter cold.

In the preceding description, I have merely mentioned buboes and carbuncles among the symptoms of the plague. It will be proper, in this place, to describe

* If it be true that the plague (as asserted by *Prosper Alpinus*) commonly ceases in Egypt about the summer solstice, it does not necessarily follow that it is owing to the increased temperature of the atmosphere. It may be connected with the inundation of the Nile, which takes place at that time, and some other concurring causes. Certain it is, that it is most prevalent in that country after the waters of the Nile have subsided.

† I use the expression *generally;* for in a small tract on contagion, which I published in 1804, I have shown (p. 19,) that in many parts of Europe the plague has not always been suppressed by the cold of winter, but on the contrary has existed *sporadically*, and in a milder form, during that season.

these characteristic eruptions more particularly.

Buboes. These are painful tumours of the inguinal and axillary glands. The first are rather femoral than inguinal buboes, being situated about an inch below the groins, and in this respect differing from venereal buboes. The axillary buboes also are not seated exactly in the centre of the armpits, but a little lower down, or towards the pectoral muscles. These tumours are more or less elevated and inflamed, and vary in size from a pea or small hazel nut, to that of a large apple. In the same patient there are sometimes buboes in both groins, and in both armpits; but more commonly in one groin and one armpit at the same time. They generally make their appearance on the second or third day, seldom so late as the fourth. When they proceed to maturation, and yield a good pus, a perfect crisis of the disorder is effected.—Parotid and maxillary buboes are tumefactions of the parotid

and submaxillary glands. They are more disposed to suppuration than the *parotides* which occur in other fevers.

Carbuncles. These appear at first under the form of small pustules (which afterwards spread), or vesicles of a yellow, or livid colour, surrounded with an inflamed basis, and quickly running into a gangrene, in which state they are covered with a black eschar or crust. Sometimes they appear as red spots (producing a burning pain), scarcely raised above the skin, and with a number of white or yellowish pustules upon them not larger than a pin's head, which soon burst, when the parts underneath exhibit a livid appearance, and are converted into a gangrene, that spreads in every direction. *Orræus* terms this the *dry* carbuncle, to distinguish it from the other varieties which are *moist*.

The *vesicular eruptions* (termed *blains* by English writers on the plague), resemble the eruptions which appear in pemphigus. They consist of blisters on

various parts of the body, varying in bulk from the size of a pea to that of a filbert, and containing a yellowish or livid ichor, with an inflamed margin. After they break they often run into sphacelation, so as to constitute a variety of the carbuncle*.

Carbuncles make their appearance on the second, third, or fourth day. They occur in every part of the body, but chiefly in the fleshy parts. They are internal as well as external, having been found, on dissection, on the tongue, in the fauces, in the stomach, intestines, &c. They sometimes appear without buboes; often with petechiæ only; and not unfrequently in conjunction with buboes and petechiæ. It has sometimes happened that they have been seated immediately upon the buboes. Sometimes not more than a single carbuncle appears in one subject, sometimes several. *Chenot*

* They who wish to see a minute description of every variety of carbuncle, must consult *Dr. Russell's* Treatise on the Plague.

counted as many as twelve in one patient. They vary in size, being from one inch to five inches in diameter. In favourable cases, a separation of the dead from the surrounding and subjacent living parts takes place, and the eschar comes away, leaving behind an ulcer of proportionate size, from which there is a purulent discharge, and which heals sooner or later, according to the state of the patient, the chirurgical treatment, and other circumstances.—The ANTHRAX of some authors is only the worst sort of carbuncle.

VIBICES are livid or black streaks, which appear on the skin. They are so called from their resemblance to the marks produced by whipping.

The PETECHIÆ, or unelevated spots on the skin like flea bites, are of various colours, red, purple, brown, livid, black. When this country was visited by the plague about a century and a half ago, the deep purple or black petechiæ were called *tokens*, or *death-tokens*. When

several petechiæ run together, they form *broad blotches* (maculæ latæ), which occur in the worst forms of the disorder.

It remains only to subjoin an account of the APPEARANCES ON DISSECTION.

In the bodies of those who have died of the plague, the blood has appeared of a black colour, and in a very dissolved state (*Lange*, p. 78). Marks of inflammation* and gangrene have been found in the brain and its investing membranes (*Chicoyneau*, pp. 261, 265), and in the lungs (*Id.* pp. 266, 398, 400, and *Lange*, p. 79). The gall-bladder full of dark green or black bile† (*Chicoyneau*, pp. 266, 398,

* ***Pestilential inflammation***, very different from ***simple inflammation***, not being accompanied by a hard pulse, nor by an exudation of coagulable lymph, but rapidly terminating in gangrene; circumstances which should be well considered by those who might be led by the term inflammation to resort to the lancet. *Dr. Lange* relates a case in which the liver and lungs were so completely gangrened, as to crumble between the fingers.

† But this is by no means general; for in many cases the contents of the gall-bladder, both as to quantity and quality, are nearly the same as in health.

400, and *Lange*, p. 78), with the liver sometimes diseased (*Chicoyneau*, pp. last quoted), sometimes *not** (*Lange*, p. 78); the stomach inflamed and gangrened (*Chicoyneau*, pp. 166, 279, 403, and *Chenot*, p. 192), and the intestines (*Lange*, p. 79). The glandular system is in all instances morbidly affected (*Bancroft*, p. 571).

* Neither the liver nor any other viscus was found diseased in a man aged thirty-five, who died on the second day, with an inguinal bubo, and many black petechiæ; nor in a young woman who died on the third day, with a bubo under the armpit. *Lange*, pp. 78, 79. *Dr. Price*, who was attached to the British forces in Egypt, informed *Dr. Bancroft* (Essay on Febrile Contagion, p. 571), that in all the bodies which he had dissected, *the liver was greatly enlarged;* but these, excepting one, had all been born in the East Indies. Being asked, whether he did not think it were likely that an affection of that viscus should have existed previous to the attack of the plague, than that such enlargements should have been so suddenly produced by that disease? he (*Dr. Price*) answered in the affirmative.

SECTION II.

OF THE PROGNOSIS.

THE salutary crisis of the plague is *by perspiration and buboes.*

When the *perspiration* is general, and is followed by an abatement of the febrile symptoms, a favourable termination of the disorder may be predicted. If the patient survives the fourth day without exhibiting signs of increased debility, there is a probability of recovery; but if he lives to the seventh day, without an aggravation of the leading symptoms, he may generally be pronounced to be out of danger.—*Profuse sweats,* by exhausting the strength, are extremely hurtful.

It is favourable if the *buboes* are painful and inflamed, and rise well; and when opened, discharge a good pus, the fever at the same time abating; but it denotes danger, if the buboes are tardy in

coming on, and are not followed by a remission of the leading symptoms, such as vomiting, anxietas præcordiorum, delirium, or coma. It denotes equal danger, if, after their eruption, they recede, accompanied by increased debility. *Flaccid buboes*, without pain and inflammation, are unfavourable. It is worse, if, instead of being red, they appear of a brown or livid colour.

Parotides are not considered as unfavourable; though it is observed by *De Mertens*, that they do not afford so complete a crisis as inguinal and axillary buboes.

Carbuncles which show themselves early in the disorder, which are seated in the fleshy parts, are not accompanied with a remarkable prostration of strength, and soon exhibit an inflamed, circumscribed basis, are seldom fatal; but those which are accompanied with symptoms of great debility, which come forth slowly, are depressed, and spread widely; or after their first elevation subside, rise up again, and appear pale or ash-coloured at

their bases; or after a beginning separation of the dead from the living parts, suddenly dry up, are commonly the forerunners of death.

Those *carbuncles* are highly dangerous which occupy the breast (particularly over the region of the heart), or face (particularly the eyes or nose), or are seated on the neck, or close to the spine of the back, or in the glandular parts where the buboes usually appear, or upon the buboes themselves.

Carbuncles of the viscera, known by deep-seated inward burning pains, and symptoms of extreme oppression and debility, are always fatal.

If *buboes* or *carbuncles* do not appear on or before the fourth day, and no critical perspiration takes place; but, on the contrary, an increase of heat, with vomiting, headach, and drowsiness, the patients die on the fifth day, with or without an eruption of petechiæ. And even though *buboes* and *carbuncles* should show themselves, yet if the drow-

siness, prostration of strength, oppression of the præcordia, and other febrile symptoms, do not abate, but rather increase, the event is, in like manner, fatal.

Petechiæ which appear of a red colour, after a general and moderate perspiration, are not unfavourable; but those which are of a deep purple or black colour (called *tokens)*, and those which come out without fever, are generally fatal, as is the case also with the *broad dark coloured blotches* (maculæ) formed by the confluence of several smaller petechiæ.

Vibices are certain precursors of death.

A moderate *vomiting* or *diarrhœa*, unaccompanied by a diminution of strength, is not dangerous; but if either of these symptoms occur in a violent degree (but more particularly the diarrhœa), and continue beyond the second or third day, death is the inevitable consequence.

Hæmorrhages from the nose, occurring in the beginning of the disorder, in persons of a plethoric habit of body, and

the menses in female subjects, under the same circumstances, sometimes afford relief; but if they occur after the third or fourth day, they are dangerous symptoms. Pulmonary hæmorrhage, hæmatemesis, bloody urine, and bloody stools, are fatal. Abortion takes place in pregnant women who are seized with the plague, and they die of the hæmorrhage.

A *pulse* little different from that of a person in health, is fallacious in the plague. An irregular and intermitting pulse is generally fatal.

A high degree of *delirium* (phrensy), coming on at the beginning of the disorder, and accompanied with violent fever, gave little hopes of the patients' recovery; but the opposite state of *coma*, with insensibility, and a faltering of the speech resembling drunkenness, without much apparent fever, was more generally fatal*.

* Great inclination to sleep or lethargy, at the first invasion, was a dangerous sign; and though the patient bore up under it the second or third day, yet he rarely

To the catalogue of dangerous symptoms may be added the following:

Sudden and great prostration of strength, with palpitations of the heart, and frequent faintings; hoarseness and pain of the throat; cough and difficult respiration; fixed pain in any of the viscera, and great oppression of the præcordia.

SECTION III.

OF THE CONTAGION OF THE PLAGUE.

THE contagion of the plague *is a specific contagion*, giving rise to febrile symptoms, and particularly affecting the nervous and glandular systems, in the manner described in Section I.

It is more rapidly destructive of life than any other febrile contagion. Nu-

escaped death. *Gottwald.*—See also *Hodges*, p. 148, *Chenot*, p. 68, and *Samoïlowitz* in the English translation of the Plague at Moscow.

merous instances are recorded of persons dying within a few hours after exhibiting symptoms of infection*; but it more commonly proves fatal on the second, third, or fourth day, after manifesting its action; seldom so late as the seventh.

The space of time which elapses between the application of the contagion to the body, and the manifestation of its

* Among the British troops in the expedition to Egypt, several instances occurred of the patient surviving but a few hours the first sensation of illness. *M'Gregor's* Medical Sketches, p. 131.——During the plague which broke out in Transylvania in 1786, two persons, then in health, went one afternoon into an infected house in the village of Holbach, to take an inventory of the goods left by the people who had died there. The next morning one of these persons was taken ill, and in twelve hours died of the plague. His companion sickened on the third morning afterwards, and also died in the evening. See *Lange*, p. 23, where reference is made to *Albricht* (who left a manuscript account of the plague at Cronstadt and the surrounding district in 1718, where upwards of eighteen thousand persons fell victims to the contagion) and *Diemerbroeck, Rivinus, Chenot*, &c. for instances of death taking place within twenty-four hours after the first symptoms of infection.

action, is various. In the instance of one of the persons who entered an infected house at Holbach in Transylvania (as quoted in the note at page 26), the interval appears to have been not more than seventeen or eighteen hours; on the other hand, it is certain that many do not sicken until the third, fourth, or seventh day* after receiving the infection. Perhaps the interval which is most common between the application of the contagion and its morbid action, may be stated at forty-eight hours.

The contagion of the plague is capable of producing its effects upon one and the same person several times in succession; differing in this respect from the variolous and some other febrile contagions†.

The contagion of the plague *is commu-*

* Some loimologists have asserted, that the interval extends to fourteen days; but it may be doubted whether this assertion is founded upon an accurate observation of cases. *Chenot* (p. 208) says the interval does not exceed seven days.

† *Albricht* (in the MS. before quoted) states that, during the pestilential epidemy at Cronstadt, some indi-

nicated by contact of infected persons and infected things, and most probably enters into the body by cutaneous absorption, producing that affection of the lymphatic and glandular system which has already been noticed *. In some cases, however, it destroys life by its immediate action on the nervous system †, before the marks

viduals were re-infected two or three times. Similar instances of re-infection are recorded by *Diemerbroeck, Chenot, Mackenzie, Russell*, &c. See *Lange*, pp. 55, 56. Also *Dr. Bancroft* (p. 599), who mentions several cases of re-infection that occurred in Egypt.

* Although it is probable (as *Dr. Bancroft* inculcates), that the pestilential contagion is absorbed by the cutaneous lymphatics, and that, *in most cases, the affection of the conglobate glands is produced during the passage of the contagion through them*; yet, on the other hand, it cannot be doubted that the contagion is sometimes transmitted through those glands, without producing, *in the first instance*, any morbid change in them; *but that after it (the contagion) has made its way into the circulation, and has subjected the system at large to its influence, they (the conglobate glands) tumefy, inflame, and suppurate, by participation in the constitutional affection.* In this point of view, the bubonic tumours should retain their place in the order of exanthemata.

† Sometimes exhausting by its *irritating* action, but more commonly *overcoming* by its *narcotic* effects on the nerves, and through their medium, on the brain.

of lymphatic and glandular affection show themselves.

The contagion of the plague *is not communicated by the atmosphere* *, but, as before stated, by contact. It should not, however, be understood, that it is communicated by contact alone, and in no other way. When the tongue, fauces, stomach, or lungs, are affected with carbuncle, *the breath, at the moment it is emitted, and in the immediate proximity of the mouth*, may be capable of producing infection; but in other cases, and which are by far the most numerous, where those internal parts are not diseased, it is highly probable that the contagion of the plague is not propagated by the breath †.

* Although *Dr. Pugnet*, one of the physicians attached to the French army which invaded Egypt, breathed every day, for a length of time, the atmosphere of the pest-hospitals, yet he never felt any inconvenience from it. See also *M'Gregor's* Medical Sketches, p. 109.

† Differing in this respect from small-pox, measles, scarlatina, and typhus. Yet *Dr. Russell* appears to have had some suspicions to the contrary; for he prescribed to most of his patients out of a window, about fifteen feet

The activity of the contagion of the plague is promoted, weakened, or destroyed, by certain states of the atmosphere, and particularly by extremes of cold or heat.

In the middle and northern parts of Europe, its malignity is subdued by a degree of cold at or below 32° of Fahrenheit; so that, in those countries, *it never prevails epidemically* (though it sometimes exists *sporadically**, and in a mild form) *during the winter season.* Its activity is in like manner said to be diminished, and sometimes destroyed, by an opposite temperature of the atmosphere, namely, by a high degree of heat, such as 90° and

above them. A stair passed near one of the windows, by which he had those, whose eruptions he wanted to examine, brought within four or five feet. He could not thus feel the pulse. *De Mertens,* on the contrary, ventured to approach within a foot of the infected, when he visited them; using, however, the precaution of *holding before his mouth and nose a pocket handkerchief moistened with vinegar, when he looked at a patient's tongue.*

* See note at page 13.

upwards of Fahrenheit's thermometer*. The intermediate temperature between these two extremes, appears to be that which is most favourable to its progress. Hence its increased spread and malignity, in European countries, during the summer and autumnal seasons. If the air is moist as well as warm, the fatality of the epidemic is so much the greater†.

* Thus in Egypt the plague usually ceases to rage epidemically at the summer solstice. It has, however, been before hinted (see note at p. 13), that the inundation of the Nile, which begins at that season of the year, may have some influence in this respect.

† The diminished spread and fatality of the plague, when the atmospheric temperature is equal to 90° of Fahrenheit, may be accounted for, either by supposing that, in such a degree of heat, the contagion evaporates from the surface of the body, when applied to it, before there is time for its absorption; or by supposing that it undergoes, under that high temperature, a partial decomposition, so as to be deprived of its morbific properties. But there is no reason to suppose that a degree of cold corresponding to 32° of Fahrenheit, produces any change in the qualities of the contagion. In that case its diminished activity must be referred to the altered condition of the human body itself, which, in a low temperature of the atmosphere, becomes unsusceptible of infection, *either in*

The contagion of the plague is of a very fixed and adhesive nature. Hence it is retained by clothes, furniture, and merchandise, for an indefinite length of time, unless they are duly subjected to ablution, ventilation, an evaporating heat*, acid fumigation, and other purifying processes.

Clothes, furniture, merchandise, &c. thus infected, are termed *fomites;* and it is chiefly by these, and more rarely by infected persons, that the contagion of the plague is propagated from one country to another. Commercial nations should never lose sight of this fact.

consequence of a non-absorbing state of the cutaneous lymphatics, or a power of repulsion in the whole system.

* Namely, the heat of a baker's oven (*Canestrini* de Peste, p. 73). In the British army which was sent from India to Egypt to assist in expelling the French from the latter country, the clothing and bedding of the men were washed and baked; and ovens and smoking rooms were attached to all the hospitals.—See *M'Gregor's* Medical Sketches, p. 145.

SECTION IV.

OF THE PREVENTION OF THE PLAGUE.

THE measures to be employed for preventing and suppressing the contagion of the plague, may be divided into *general* and *particular;* the first having a reference to a whole community or district, and the last to persons individually.

The contagion is excluded from one country which holds a commercial connexion with another country that is infected with the plague, by means of *quarantine,* or the detention of all persons and goods *in an isolated state,* coming from the infected country, for the space (when it was originally instituted) of forty days; but often for a much shorter period, particularly in the case of persons; for whom, in general, a three weeks' *isolation* appears to be fully sufficient.

The *general means of suppression*, after the contagion has been introduced into a country, consist *in the establishment of lazarettos, or pest-houses; in the separation of infected persons from those who are in health; in cutting off all communication between an infected district and its neighbourhood, by means of a military cordon; in the purification of infected clothes, furniture, and houses; and in the immediate interment of the dead.*

These and other measures constitute what is termed the *medical police*, in times of pestilence. They fall under the cognizance of *committees or boards of health*, appointed by the government of the country. It would therefore be superfluous to enter into a detail of such measures here. The case is otherwise in regard to the means of *prevention as applicable to individuals*, which it will be proper to consider at some length.

From what has been before stated in Section III. it follows, that individuals may secure themselves from the influence

of the contagion in places where the plague prevails epidemically, *by avoiding all contact of infected persons and infected goods.* This may be done either by flying from the infected place in due time, or by remaining *shut up;* during which no people on business or visits are admitted, and the required provisions are received, not directly from the hands of the persons who bring them, but through the intervention of a basket, let down from a window, and then not till after they have been thoroughly purified. To render this measure effectual, it must be begun early, and continued until the epidemy ceases. In this manner many families have escaped infection in places where the plague has produced the greatest mortality*.

But the mode of prevention by *shutting up* is only adapted to the more opulent families, and to such as are not under the

* For a more particular account of the method of *shutting up*, see *Dr. Alexander Russell's* History of Aleppo.

necessity of having any direct intercourse with the inhabitants of an infected place.

Those who, from their situation or business, cannot always avoid actual contact of infected persons or infected things, should pay particular attention to *ablution*, which should be repeated every time they may have touched infected clothes, furniture, or persons. For the purpose of ablution, cold water mixed with vinegar, or vinegar alone, may be used. Not merely the hands, but the arms, neck, and face, should be well washed with it*. Thus if any of the contagious particles should adhere to the skin, they will be removed

* *De Mertens* recommends washing the whole body with vinegar: but this cannot well be repeated more than once in the day; whereas ablution of the hands, arms, neck, and face, (the parts most exposed to the contagion,) may and should be repeated several times a day. Immediately after visiting the pest-houses belonging to the French army in Egypt, *Mons. Desgenettes* washed his hands with vinegar and water, or soap and water, and as soon as he returned home, he changed his linen and clothes entirely, and washed his body all over with lukewarm water and vinegar.

from it before there is sufficient time for their absorption.

It is obvious that *cleanliness* is as necessary in regard to linen and clothes, as it is in regard to the body itself; they should therefore be frequently changed and washed *.

Ventilation, or frequent exposure to the open air, is another mode of preventing infection, not only by serving to dissipate any contagious matter that may be lodged on the clothes, but also by its strengthening effects on the body itself, whereby it is enabled to resist the morbific influence of the contagion. Hence the plague always makes less havoc in armies encamped on open, dry, and elevated situa-

* Persons who are constantly employed about the infected should wear over their common dress a surtout made of oiled coarse linen (like a waggoner's frock), and their hands should be protected by gloves made of similar materials (*De Mertens*, p. 108). At least once in the day the surtout and gloves should be well washed with vinegar. Medical men should use gloves made of oiled silk, and sleeves also made of the same material.

tions, than it does among an equal number of inhabitants residing in villages and towns. The method of encampment succeeded in putting a stop to the spread of the plague at Marseilles, after every other method had failed.

If *friction of the body with olive oil* be really a preventive remedy, it would appear to operate *by obstructing the absorption of the contagious particles.* I have been informed that it has been used at Malta, where, notwithstanding, the mortality has been very great. It would be very desirable to know whether a register has been kept in that island of the number of persons who rubbed their bodies with oil, and yet took the infection. If the majority, and a very considerable majority, of those who resorted to this method, were not exempted from infection, it should be wholly set aside, and something more effectual should be substituted in its place*.

* *Oily friction* has been recommended, not only as a *preventive*, but as a *curative* remedy in the plague: but

Hitherto I have been giving an account of those preventive measures which seem to operate *by removing the contagion after it has been applied to the surface of the body*, as in the case of ablution, *or by obstructing its absorption*, as in the case of inunction.

I now proceed to the consideration of another set of preventive remedies, *which operate by enabling the human body to resist or repel the action of the contagion*, when it comes in contact with it.

That the human body, under particular circumstances, acquires *a power of resisting or repelling the action of different contagions*, is evinced by daily experience. This power is sometimes *permanent*, as in the case of vaccination, in regard to the variolous contagion; and sometimes *tem-*

with the last-mentioned intention, I believe it is now rarely prescribed by medical practitioners; not only because its curative powers are extremely doubtful, but because the process itself requires so much time and trouble, and exposes the persons who undertake it to the risk of becoming infected. See *Bancroft*, p. 623.

porary, as in the case of persons who at one time escape infection when exposed to febrile contagion, but at another time become susceptible of its influence.

This principle being established, it is a matter of the highest interest to ascertain with what circumstances such a *resisting or repelling condition* of the human body is connected.

If we examine with due attention the histories of pestilential epidemics, we shall find that the greatest mortality has occurred where individuals have been most exposed to debilitating causes; and, on the contrary, that in proportion as they have been under the influence of *certain tonic agents*, they have either wholly escaped infection, or, if they have caught the disease, have had it in its mildest form.

Among agents of this description, the principal, in relation to the plague, is *cold*. Hence the benefit which results from the daily use of the cold bath, as a means of prevention. Bathing in fresh

water is not without its advantages; but bathing in *salt water* (whether natural or artificial) is preferable. Where access to the sea cannot be had, nor an artificial salt water bath on a sufficiently large scale, I propose, as a convenient substitute, *that the shirt be dipped every morning in a saturated solution of common salt in cold water, and that after having been gently wrung out, it be put on wet and cold**. This will produce all the tonic effects of sea-bathing, and may in all cases be prescribed where that remedy is proper. Immediately after putting on the wet salted shirt, persons should not sit still, but keep the body in motion. This preventive measure is particularly adapted to the warm season of the year, at which time, in Europe, the plague always rages with the greatest fury†.

* Some may be disposed to add a small quantity of vinegar to the brine. There can be no harm in such an addition, but I conceive it to be quite unnecessary.

† Exceptions may be made against the use of sea-bathing, or its more convenient substitute, the *wet salted shirt*, in regard to persons affected with pulmonary disorders, bowel complaints, &c.; but, such cases excepted,

The *Peruvian Bark*, where constitutional complaints do not forbid its use, may be taken in some form or other, the alvine excretion being at the same time properly regulated.

It will also conduce to the same end, if the temperature of the particular spot where the plague is raging *be reduced by artificial means.* This may be done by scattering water profusely over the streets, and against the sides of the houses, by means of fire engines. The evaporation of the water will be followed by a considerable diminution of the temperature of the immediately surrounding atmosphere; *and if the aspersion, or rather profusion, of water be repeated twice in the day, and each time in sufficient quantity, the evaporation will be kept up for hours, and the consequent local refrigeration will not be momentary, but continued*.*

this measure may be considered as universally applicable, by way of prevention, during the prevalence of a pestilential epidemy.

* The difference between the common mode of *watering* the streets and this process, deserves attention. In the

Whatever may be the case with Egypt and the Levant, it is certain that in the middle and northern parts of Europe *the degree of atmospheric heat is never great enough, for any length of time*†, *to produce either in the contagious particles themselves, or upon the human body, those changes which lead to the cessation of a pestilential epidemy.* But the atmospheric temperature is great enough, during the summer, and part of the

former case, no water is applied to the sides of the houses, and the quantity scattered on the surface of the pavement is so inconsiderable, that it is soon dried up, and the subsequent cooling effect is small and fugitive. ***But when a large body of water is applied in the manner above proposed, is repeated at proper intervals, and is persisted in at each repetition for a sufficient length of time, a considerable and continued refrigeration succeeds.***—In maritime situations, sea-water may be used instead of fresh water. I have all along reasoned on the supposition, that where the plague is prevalent there is no want of water or of engines. It is obvious, that where either of them is wanting, this measure is inapplicable.

† High degrees of atmospheric warmth (from 94 to 96) are occasionally observed in the middle parts of Europe; but they continue only a few days, and are quickly succeeded by the ordinary temperature.

autumn, to produce a contrary effect, *i. e.* to promote the spread and malignity of the contagion. Every reduction, therefore, of that temperature must tend to check the progress and virulence of the epidemic. By *profusion of water*, on the extended plan above stated, we cannot, it is true, cool the atmosphere of any particular spot in a degree equal to that which usually obtains in the winter season, when the plague never prevails epidemically in the parts of Europe before mentioned; but *by this process* we can make some approximations to that low degree of temperature; and every such approximation would be followed, there cannot be a doubt, by a proportionate diminution of the disease*.

* The summer of 1665, when the plague occasioned such dreadful havoc in London, was remarkably *hot and dry* (*Bancroft*, pp. 606, 607). And it will be seen in a note, too long to be introduced in this place, and therefore inserted at the end of the pamphlet, that the *heavy rains* which fell in Egypt in the month of February, 1802, reduced to less than a third the number of new plague cases in the British army, and rendered the disease consi-

SECTION V.

OF THE INOCULATION OF THE PLAGUE.

THE small pox being rendered so much milder by inoculation, it was natural to presume that the plague also, instead of being attended with extreme danger, might, by the same means, be greatly mitigated. Accordingly its inoculation was first proposed in 1755 by *Vespremi* *, and again brought forward by *Samoïlowitz* in 1782 †. But nothing seems to have been done in this way until the French invaded Egypt in 1798. The

derably milder. By the profuse application of water in the manner above mentioned (*aquæ profusio*), we produce *artificially* (though doubtless in a less degree) the effect which is produced *by the natural descent of water*, in the form of rain.

* Tentamen de Inoculandâ Peste.

† Memoire sur l'Inoculation de la Peste.

principal physician attached to that expedition inoculated himself with bubonic pus, without taking the disease*. In 1802, Dr. Whyte, belonging to the medical staff of the British forces in Egypt, inoculated himself in the wrist (the preceding night he had rubbed some bubonic matter on the inside of his thighs) with a lancet that had been dipped in the running bubo of a sepoy. On the sixth day symptoms of infection began to show themselves, and three days after their appearance Dr. Whyte died†. But even if the plague had been rendered milder by inoculation; yet the fact, that persons, who have once had the disease, are not unsusceptible of future attacks, is an insurmountable objection to such a measure. *Chenot* (pp. 49, 50), *Mackenzie* (Phil. Trans. vol. 54), *Orræus* (p. 60), and *Lange* (p. 56), mention various

* The experiment was somewhat illusory, as *Dr. Desgenettes* washed the parts, immediately after inoculation, with soap and water. *Bancroft*, p. 584.

† *M'Gregor's* Medical Sketches, pp. 113, 115.

instances of the same persons being re-infected several times. Of these, some died under the second attack.

SECTION VI.

OF THE CURATIVE TREATMENT OF THE PLAGUE.

ALTHOUGH nothing effectual had been done towards the cure of the plague during a long series of ages; yet hopes were entertained, that among the number of intelligent physicians who attended the French army which invaded Egypt in 1798, some might be fortunate enough to discover a new and more successful mode of treatment. This expectation, however, terminated in disappointment.

A similar expectation was entertained afterwards, when several able medical men from this country accompanied the British forces sent to Egypt in 1801 and

1802. Every rational and justifiable effort was made to conquer the disease by medicine, and some of the methods to which they resorted, though they had been before adopted in other febrile disorders, were new in relation to the plague.

If the mortality of the plague was not much diminished by these new attempts, yet the medical officers from whom they proceeded are justly entitled to the warmest thanks of the nation, for their unremitting exertions, and for the readiness with which they exposed themselves, by their diligent attendance on the sick, to the danger of infection.

The medicine which was thought to produce the best effect, was mercury, used both internally and externally. One of the greatest advocates for this remedy states, that "calomel affected the gums of all his patients who survived." It is proper, however, to subjoin, that in many cases a ptyalism could not be produced, although calomel and the mercu-

rial ointment were pushed to a great length. These were fatal cases*. A doubt, therefore, naturally arises, whether, in those cases in which a soreness of the gums or salivation was excited, the recovery was due to the mercury, or to strength of constitution, aided by other remedies used at the same time? As the deaths which took place, *notwithstanding the free administration of mercury both internally and externally*, were numerous, it may be contended, that the surviving cases, in which there was time for its absorption, only prove that *the mercury was no impediment to recovery, but not the cause of recovery*†. It should be

* In two-thirds of a given number of persons seized with the plague, the disease is so rapid in its course, that there is not time for the mercury to be absorbed in quantity sufficient to produce a ptyalism, or to affect the system generally. This circumstance alone is a great objection to the use of this remedy, in the disorder under consideration.

† *Dr. Price*, who in consequence of the recovery of some patients in whom he was able to excite a salivation, and the deaths of *all* those in whom he attempted to excite it, without success, was induced to entertain a high

added, that the reports of other practitioners, relative to the employment of mercury in the plague, are extremely unfavourable*.

The *nitric acid* was also thought to produce a good effect in some limited

opinion of the remedial powers of mercury in the plague. He admitted, however, in a conversation with *Dr. Bancroft* (Essay on Febrile Contagion, p. 621), that he had always found it extremely difficult to affect the salivary glands of persons under the plague, and was never able to do it by mercurial inunctions alone: and when *Dr. Bancroft* observed to him, that a considerable time would be necessary to produce salivation by the means which he had employed, *i. e.* unction and calomel internally, and that it seemed probable enough that those who lived long enough to be salivated in this way, must have previously passed over the dangerous part of the disease, and have been therefore likely to recover if no salivation had taken place;—he admitted that *Dr. B.'s* observation was probably just, and that the deaths of those in whom a salivation was not produced, had *always taken place before the time* which was commonly required to affect the salivary glands. Hence *Dr. B.* infers that the supposed benefit of mercurial salivation in the plague, is founded on fallacious reasoning.

* *Diedier*, *Orræus*, *Pugnet*, and *Sotira*, as instanced by *Dr. Bancroft* (p. 620), to which add *Samoilowitz*. See Preface to his Observations on the Plague.

trials; but it is doubted whether, when the stomach becomes irritable (as frequently happens in the plague), it can be given with propriety. (*M'Gregor*, p. 139)*.

Spunging the body with vinegar or citric acid appeared to have a good effect; but the *cold bath* was found to be hurtful.

The *bleeding plan*, and the *opposite Brunonian plan*, of giving wine and opium, were equally unsuccessful.

From this general view of the result of the various remedies employed by the British medical officers in Egypt, it appears that some more successful modes of treatment are yet to be hoped for.

On this most interesting but difficult subject, I beg leave to offer some suggestions.

It has been stated in Section I. that the plague appears under different types; and that in some of those types the de-

* The *warm nitric acid bath* was also tried; but it is remarked, that the stock of that acid was insufficient to do this, otherwise than on a small scale.

gree of morbid affection is mild and slight, while in others it is violent and dangerous. In the latter instances the symptoms are sometimes such as indicate an *increased*, at other times a *diminished* sensibility or irritability. But one and the same mode of treatment cannot be proper in all. There will be little probability of success, *unless the remedies are adapted to the particular form of attack.* Thus,

In the type termed *pestis mitior*, the treatment should be mild and simple. If much nausea prevails, the stomach may be cleared by an ipecacuanha emetic; after which, for the first twelve or fourteen hours, nothing more seems to be required than *to dilute freely, with a watery mucilaginous drink, rendered acidulous either by the citric acid or crystals of tartar (supertartrate of potash).* The simplest and best preparation of the kind consists of common water, with a proper quantity of gum-arabic dissolved in it. The proportion may be, half an ounce, or

six drachms of the gum to a pint of water, with two drachms of supertartrate of potash. This preparation is greatly preferable to barley-water, which, besides requiring so much time in the boiling, is loaded with starch and other matter, which is not suited to the febrile affection, nor capable of operating with the same good effect *upon the nervous and absorbing systems**. The patient should drink two or three ounces of the before-mentioned beverage every hour, lukewarm or cold. It will operate chiefly on the skin and kidneys. If,

* As an exanthematous disease, and as one in which there is a marked affection of *the lymphatic and glandular system*, mucilage is strongly indicated in the curative treatment of the plague. But, independently of these considerations, it is well known that the greatest advantages are derived from the exhibition of mucilaginous drinks, *in all febrile disorders*. Such preparations not only tend to counteract the morbid changes going forward in the circulating fluids, but produce a beneficial effect *upon the nervous system also*, allaying irritation and its constant accompaniment heat; so that if any thing be entitled to the appellation of an universal febrifuge, *it is mucilage in a sufficiently diluted state*.

after taking it for some hours, the bowels should be disturbed by it, the super-tartrate of potash should be omitted, and the *diluted mucilage* alone should be given. In twelve or fourteen hours, when the febrile symptoms have abated, the camphor mixture with æther may be prescribed; and afterwards, when the remains of the disease may be expressed by the single term debility, some preparation of the cinchona, acidulated with the nitric or muriatic acids, will be proper.

In the second type of the plague, termed *pestis gravior*, remedies of a more potent and active nature are called for. The relief must be prompt, otherwise the patients sink under the comatose affection and general debility. In this form of the disease, when accompanied, as it generally is, with a costive state of the body, I would propose the use of *a brisk cathartic, immediately succeeded by the cinchona and æther.* Thus, in about an hour after getting down a dose of jalap

and calomel, I would give two ounces of the cinchona decoction, mixed with a scruple of its own powder, and with half a drachm of æther every two hours, directing the arms and breast to be well spunged *with vinegar having salt dissolved in it*. If, after four hours' time, no evacuation from the bowels should take place, the jalap and calomel should be repeated, but in a smaller dose, while the strengthening medicines are at the same time continued*. After the bowels have been

* Purging is by no means recommended by the best authorities as a *general* remedy in the plague; but in the beginning of an attack of that disorder, under the present form, when accompanied with costiveness, it seems (since we cannot have recourse to bleeding and blistering) to be *indispensably requisite for the relief of the brain*. At the same time, where debility, as well as the cerebral affection, is an urgent symptom, it will not be prudent to withhold the administration of strengthening medicines until the bowels shall have been moved. This mode of administering cathartics and tonics *jointly*, is no novelty in the practice of physic. *Dr. Cleghorn* did the same thing in the worst cases of intermittents which occurred in the Island of Minorca; and the same thing is done every day in dropsy, and some other diseases of debility, not accompanied with fever.

moved, the patient should drink freely of *diluted mucilage* (without the supertartrate of potash), and continue the cinchona, which may now be acidulated with the nitric or muriatic acids. Red wine may be added to the mucilaginous beverage, or not, according to circumstances.

Pestis gravissima. Notwithstanding the high delirium or phrenitis so common in this form of the plague, and the occasional symptoms of pulmonary affection*, venesection is rarely admissible. The febrile action must be mitigated by some other means. As there is generally a spontaneous vomiting, the clearing of the stomach by ipecacuanha is not required; and the affection of the brain, in this form of the

* I have before pointed out, in a note at p. 18, the difference between *simple* and *pestilential* inflammation. In the worst cases of scarlatina, there is sometimes an affection of the lungs resembling that which occurs in some cases of plague; yet in that disease (scarlatina) no physician advises the use of the lancet.

plague, is not to be relieved by evacuations from the bowels, *but by a moderate degree of perspiration, procured by cooling, un-irritating diaphoretics.* Of this description is the nitrate of potash (nitre)*, joined with the hyoscyamus. Suppose five or six grains of nitre, and one or two grains of hyoscyamus-extract every two hours, for the space of ten or twelve hours, during which the patient should drink freely of *diluted mucilage*, without the supertartrate of potash. There should be no accumulation of bed-clothes, and the room should be kept as cool as possible. After the relief of the affection of the brain, and of the general febrile symptoms, the nitre and hyoscyamus should be discontinued;

* *Nitre in small doses frequently repeated, and joined with a narcotic,* appears to be particularly adapted to the febrile symptoms which occur in this type of the plague. In simple inflammatory diseases, it succeeds better given by itself, in large doses. Where the stomach is not remarkably irritable, half a grain of ipecacuanha may be added to each dose of the nitre and hyoscyamus.

and as the debility will then constitute the chief object of attention, æther, and the acidulated preparations of the cinchona, should be prescribed; the bowels being at the same time properly regulated.

In the curative treatment above proposed, I have suggested the use of the hyoscyamus; but it is proper to mention, that *Dr. Lange*, in the Preface to the second edition of his Treatise, gives a very favourable report of another narcotic, the *belladonna*. Two grains of the dried leaves of this plant, rubbed to a powder with a small quantity of refined sugar, were given twice a day to five persons ill of the plague. Three of them had buboes only; the other two had carbuncles with buboes. *They all recovered.* It produced perspiration, and forwarded the buboes in every one of the patients. *Dr. Lange*, however, candidly acknowledges that those trials were not made till the epidemy was

ceasing, and that in two out of the five cases, half a drachm of the cinchona in powder was administered with each dose of the belladonna, after the carbuncles had made their appearance. But with every allowance for the circumstances last stated, the recovery of five plague cases (the whole number subjected to experiment) under the use of the belladonna, is a fact not unworthy the attention of physicians.

ADDITIONS.

In confirmation of the utility of the proposed plan for cooling, by evaporation of water profusely applied, the immediately surrounding atmosphere of a place infected with pestilential contagion, I have mentioned in a note at page 44, that a remarkable decrease of plague cases was observed in the British army in Egypt, *during the heavy rain* which fell in the month of February, 1802. I shall here state the circumstances connected with this fact, which I conceive to be of great importance.

In the month of January, 1802, there were *eleven days of rain* (out of thirty-one days). The thermometer was only once below 60°, and never above 70°. The number of new plague cases in the army this month amounted to seventy-two.

In the following month, February (which is characterized as "a very *cold and wet* month"), there were *nineteen days of rain** (out of the whole twenty-eight days), *and the thermometer was sometimes as low as* 55°, *and never higher than* 63°. The whole number of plague cases which occurred in the army during this month was *only twenty-one.* Fever appeared in all. It was accompanied with inflammatory diathesis, and *was in general slight. M'Gregor*, pp. 30—35.

Thus it appears, that *in consequence of the cooling effects of the heavy and continued rain*, there were only twenty-one new plague cases in the month of February; whereas, in the preceding warmer month of January, the number of new cases of infection amounted to seventy-one.

* On some of these days "it rained as heavily as in the monsoons in India." It is remarked, that in the winter of 1802, the weather was unusually wet and cold, *for the climate of Egypt.* Had the weather been *not so wet, and consequently warmer*, I have no doubt that twice or thrice as many plague cases would have occurred in the British army.

After noticing the prevailing opinion, that extremes of both heat and cold stop the progress of plague contagion, the author above quoted remarks, that if this be true in regard to heat, it did not appear to be so in the army in Egypt in regard to cold. But what is the cold in Egypt during the coldest season of that climate? On an average it is equal (excepting a part of December) to the ordinary summer warmth of Great Britain, as appears from the following statement. *M'Gregor*, as before quoted, pp. 27—35.

In December the thermometer, in tents, was *sometimes* so low as 49°, and rarely rose *above* 70°.

In January the thermometer was *once* below 60°, and never above 70°, in a house in the centre of the city of Alexandria.

In February the thermometer moved between 55° and 63°. This was altogether the coldest month, and was that in which (as before stated) there was so

remarkable a reduction in the number of new cases of plague infection.

At page 31 it is stated, that the intermediate temperature between 32° and 90°, appears to be that which is most favourable to the progress of the plague contagion. It should be thus stated: the intermediate temperature between 50° and 90°, &c.

At page 32 I have merely mentioned *acid fumigation* as one of the means of *eradicating* the plague contagion, without describing the process, which is now so well known, whether it be *Morveau's* or *Dr. Carmichael Smyth's.*

By the heat of a baker's oven, mentioned at page 32, is intended such a degree of heat as shall be sufficient to evaporate and *decompound* the contagion, without scorching the clothes.

FINIS.

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MEDICAL TRACTS,

BY THE SAME AUTHOR.

I.

OBSERVATIONS

ON THE

EPIDEMIC CATARRHAL FEVER

OF 1803.

SECOND EDITION.

II.

OUTLINES

OF

A Plan

TO

STOP THE PROGRESS

OF

MALIGNANT CONTAGION.

1804.